

WHAT IS CLAIMED IS:

1. A transmission coordination device for a wireless communication network, wherein a first plurality of communication devices using a first protocol and a second plurality of communication devices using a second protocol exchange information within the wireless communication network using overlapping communication frequencies, the device comprising:

a signal processing component configured to receive information derived from the first and second plurality of network devices;

a traffic evaluation component that assesses the information received by the signal processing component to identify impending collisions between the first and the second protocol; and

a traffic coordination component that determines a communication link type between a master device and a slave device using the first protocol based on the type of communication link between the master device and the slave device.

2. The transmission coordination device of Claim 1 wherein the traffic coordination component reduces collisions between information exchanged using the first protocol and the second protocol.

3. The device of Claim 1, wherein the communication link type is a non-deferrable data type.

4. The device of Claim 3, wherein the non-deferrable data type is a voice data type having a synchronous-connection-oriented (SCO) communication link.

5. The device of Claim 1, wherein type of communication link is a deferrable data type having an asynchronous-connection-link (ACL) communication link.

6. The device of Claim 1, wherein the traffic coordination component prioritizes the exchange of information by delaying information exchange in the first or second protocol.

7. The device of Claim 1, wherein the traffic coordination component prioritizes the exchange of information by dropping at least some of the information exchanged in the first or the second protocol.

8. The device of Claim 1, wherein the transmission coordination device is interposed between a backbone network and the wireless communications network and acts as an access point to link the wireless communication devices to the backbone network.

9. The device of Claim 8, wherein the backbone network comprises land-based networks including Ethernet, digital subscriber line, dial-up, or plane telephone networks.

10. The device of Claim 1, wherein the first protocol or the second protocol is a frequency-hopping spread spectrum protocol.

11. The device of Claim 10, wherein the frequency-hopping spread spectrum protocol comprises a Bluetooth protocol.

12. The device of Claim 1, wherein the first or the second protocol is a direct-sequence spread spectrum protocol.

13. The device of Claim 12, wherein the direct-sequence spread spectrum protocol comprises a wireless local area network (WLAN) protocol.

14. A centralized coordination device for a wireless communication network, wherein information exchange devices using a first protocol and a second protocol transmit a plurality of frequency-overlapping communication signals in the wireless communication network, the device comprising:

a signal processing component configured to receive and analyze timing characteristics from the plurality of frequency-overlapping communication signals;

an evaluation component configured to communicate with the signal processing component and further configured to determine a type of communication link type established by the information exchange devices using the first protocol; and

a coordination component used to prioritize the plurality of frequency-overlapping communication signals based on the timing characteristics and the communication link type to reduce collisions in the information exchange of the first and second protocols.

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15. The device of Claim 14, wherein the communication link type is a non-deferrable data type.

16. The device of Claim 15, wherein the non-deferrable data type is a voice data type.

5 17. The device of Claim 16, wherein the voice data type is a synchronous-connection-oriented (SCO) communication link.

18. The device of Claim 14, wherein the communication link type is a deferrable data type.

10 19. The device of Claim 18, wherein the deferrable data type is an asynchronous-connection-link (ACL) communication link.

20. The device of Claim 14, wherein the first or second protocol is a frequency-hopping spread spectrum protocol.

21. The device of Claim 20, wherein the frequency-hopping spread spectrum protocol comprises a Bluetooth protocol.

15 22. The device of Claim 14, wherein the first or second protocol is a direct-sequence spread spectrum protocol.

23. The device of Claim 22, wherein the direct-sequence spread spectrum protocol comprises an IEEE 802.11B wireless local area network (WLAN) protocol.

20 24. The device of Claim 14, wherein the centralized coordination device is configured to interface with a backbone network.

25. The device of Claim 24, wherein the backbone network comprises land-based networks including Ethernet, digital subscriber line, dial-up, or plane telephone networks.

25 26. A centralized coordination system for a wireless communication network, wherein the wireless transfer of information is exchanged using overlapping communication frequencies, the system comprising:

30 a station access area, wherein a plurality of Bluetooth communication devices using a Bluetooth protocol generate a plurality of Bluetooth communication signals, and a plurality of WLAN communication devices using a WLAN protocol generate a plurality of WLAN communication signals;

a Bluetooth master device configured to receive and analyze the plurality of Bluetooth communication signals derived from the plurality of Bluetooth communication devices and the plurality of WLAN communication signals derived from the plurality of WLAN communication devices;

5 a traffic evaluation component used by the Bluetooth master device to evaluate the timing of the plurality of Bluetooth and the WLAN communication signals and to identify impending collisions between the plurality of Bluetooth and the WLAN communication signals in the wireless communication network; and

10 a traffic coordination component used to determine a type of communication link established between the Bluetooth master device and the plurality of Bluetooth communication devices, wherein the traffic coordination component prioritizes the plurality of wireless network transmissions to reduce collisions between Bluetooth and WLAN communication signals and to improve throughput in the wireless communication network.

15 27. The system of Claim 26, wherein the traffic coordination component is interposed between a backbone network and the station access area to regulate the wireless transfer of information between the plurality of Bluetooth and WLAN communication devices and the backbone network.

20 28. A communication system for a wireless network comprising:  
a plurality of wireless communication devices, which communicate using a first and a second frequency-overlapping data exchange protocol;  
a centralized coordination access point used to control the exchange of data and information between at least some of the wireless communication devices using at least one of a plurality of frequency-overlapping data exchange protocols;

25 a signal processing component used by the centralized coordination access point to monitor the wireless communication signals of the first and the second protocol;

an evaluation component used by the centralized coordination access point to identify impending collisions between the wireless communication signals of the first and second protocol;

a coordination component used by the centralized coordination access point to determine the transmission relationship between the plurality of wireless network devices using the first protocol, wherein the transmission relationship further identifies a communication link between a master device and a slave device, wherein the master device communicates with the slave device using downstream transmission signals and the slave device communicates with the master device using upstream transmission signals; and

a synchronization component used by the centralized coordination access point to implement a collision avoidance procedure based on the type of communication link between the master device and the slave device to reduce collisions and improve throughput in the wireless communication network.

29. The system of Claim 28, wherein the centralized coordination access point moderates the wireless communication signals by influencing the downstream transmission signals associated with at least some of the wireless communication devices.

30. The system of Claim 28, wherein the centralized coordination access point moderates the wireless communication signals by influencing both upstream transmission signals and downstream transmission signals associated with at least some of the wireless communication devices.

31. The system of Claim 28, wherein one of the plurality of frequency-overlapping data exchange protocols further comprises the Bluetooth network protocol.

32. The system of Claim 28, wherein one of the plurality of frequency-overlapping data exchange protocols further comprises the IEEE 802.11B wireless local area network (WLAN) protocol.

33. The system of Claim 28, wherein the centralized coordination access point further acts as a Bluetooth master to control upstream and downstream data exchange between wireless communication devices, which communicate using the Bluetooth network protocol.

34. A method of scheduling a plurality of wireless communication signals between a first and second protocol that operate with overlapping communication frequencies in a plurality of wireless network devices, the method comprising:

monitoring the wireless communication signals of the first and the second protocols;

identifying impending collisions between the wireless communication signals of the first and second protocol;

determining the transmission relationship between the plurality of wireless network devices using the first protocol, wherein the transmission relationship further identifies a type of communication link between a master device and a slave device; and

implementing a collision avoidance procedure based on the type of communication link between the master device and the slave device to reduce collisions and improve throughput in the wireless communication network.

35. The method of Claim 34, wherein the type of communication link is a voice data type.

36. The method of Claim 35, wherein the voice data type is a synchronous-connection-oriented (SCO) communication link.

37. The method of Claim 34, wherein the type of communication link is a general application data type.

38. The method of Claim 37, wherein the general application data type is an asynchronous-connection-link (ACL) communication link.

39. The method of Claim 34, wherein the method of scheduling further comprises prioritizing the plurality of wireless communication signals by delaying at least one of the plurality of wireless communication signals derived from at least one of the plurality of wireless network devices using the first protocol.

40. The method of Claim 34, the method of scheduling further comprises prioritizing the plurality of wireless communication signals by dropping at least one of the plurality of wireless communication signals derived from at least one of the plurality of wireless network devices using the first protocol.

41. The method of Claim 34, wherein the plurality of wireless network devices communicate with a backbone network.

42. The method of Claim 41, wherein the backbone network comprises land-based networks including Ethernet, digital subscriber line, dial-up, or plane telephone networks.

43. The method of Claim 34, wherein the first protocol is defined as a frequency-hopping spread spectrum protocol.

44. The method of Claim 43, wherein the frequency-hopping spread spectrum protocol comprises a Bluetooth protocol.

45. The method of Claim 34, wherein the second protocol is defined as a direct-sequence spread spectrum protocol.

46. The method of Claim 45, wherein the direct-sequence spread spectrum protocol comprises an IEEE 802.11B wireless local area network (WLAN) protocol.

47. A method of scheduling a plurality of wireless communication signals derived from a frequency hopping spread spectrum (FHSS) protocol and a direct sequence spread spectrum (DSSS) protocol that are transmitted with overlapping communication frequencies, the method comprising:

monitoring the wireless communication signals of the FHSS and the DSSS protocols;

identifying impending collisions between the wireless communication signals of the FHSS and the DSSS protocols;

determining the transmission relationship between the plurality of wireless network devices using the FHSS protocol, wherein the transmission relationship further identifies a type of communication link between an FHSS master device and an FHSS slave device; and

implementing a collision avoidance procedure based on the type of communication link between the FHSS master device and the DSSS slave device to reduce collisions and improve throughput in the wireless communication network.

48. The method of Claim 47, wherein the type of communication link is a synchronous-connection-oriented (SCO) communication link.

49. The method of Claim 48, wherein the synchronous-connection-oriented (SCO) communication link is a non-deferrable voice data type.

50. The method of Claim 47, wherein the type of communication link is an asynchronous-connection-link (ACL) communication link.

5 51. The method of Claim 50, wherein the asynchronous-connection-link (ACL) communication link is a deferrable general application data type.

10 52. The method of Claim 47, wherein the method of scheduling further comprises prioritizing the plurality of wireless communication signals by delaying at least one of the plurality of wireless communication signals derived from the FHSS protocol.

53. The method of Claim 47, the method of scheduling further comprises prioritizing the plurality of wireless communication signals by dropping at least one of the plurality of wireless communication signals derived from the FHSS protocol.

15 54. The method of Claim 47, wherein the wireless communication network communicates with a backbone network.

55. The method of Claim 54, wherein the backbone network comprises land-based networks including Ethernet, digital subscriber line, dial-up, or plane telephone networks.